

• • R E M A R K S • •

The Official Action of October 18, 2002 has been thoroughly reviewed. Accordingly, the changes made herein to the application, considered together with the following remarks are believed to be sufficient to place the application into condition for allowance.

By the present amendment, independent claim 4 has been changed to recite that the plurality of protuberances are "discrete protuberances" which are "spaced apart from one another in both a longitudinal and a transverse direction of the nonwoven fabric."

Support for this change to claim 1 can be readily found in Fig. 2.

Entry of the changes to claim 1 is respectfully requested.

Claims 4, 5 and 7-9 are pending in this application.

Claim 9 stands rejected under 35 U.S.C. §112, second paragraph as being indefinite. Under this rejection the Examiner has taken the position that "[i]n claim 9, it is not clear how a pattern of protuberances, (which are three-dimensional), can be two dimensional."

Claim 9 recites that:

...the plurality of protuberances formed in the nonwoven fabric comprise discrete protuberances that are arranged in a two dimensional pattern across the nonwoven fabric.

The Examiner will note that the shape (three-dimensional) of the protuberances have nothing to do with how they are arranged, i.e. in a two-dimensional pattern.

Note by definition ([www.webster.com](http://www.webster.com)) and "array" is "a regular and imposing grouping or arrangement."

Applicants' protuberances are arranged in a two dimensional order as seen in Fig. 2.

Accordingly, claim 9 is believed to be definite and otherwise satisfy the provisions of 35 U.S.C. §112, second paragraph.

Therefore, the Examiner is requested to reconsider and withdraw the outstanding rejection of claim 9 as being indefinite.

Claims 4, 5 and 7-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over European Patent Application No. 0 373 974 to Manning et al. in view of U.S. Patent No. 5,573,841 to Adam et al. and U.S. Patent No. 5,914,084 to Benson et al.

For the reasons set forth below, it is submitted that each of the pending claims are allowable over the prior art of record and therefore, the outstanding prior art rejection of the claims should properly be withdrawn.

Favorable reconsideration of the outstanding prior art rejection by the Examiner is earnestly solicited.

The Examiner has relied upon Manning et al. as disclosing a method of making a nonwoven fabric comprising the steps of forming a slurry of pulp fibers and thermoplastic fibers, depositing the fibers to form a wet sheet and hydraulically entangling the fibers. The Examiner states that Manning et al. teaches fibers that have the dimensions claimed by applicants.

The Examiner has conceded that Manning et al. does not disclose the weight percent of the fibers in the slurry.

The Examiner has accordingly relied upon Adam et al. as in forming a fibrous slurry that should contain about 0.01 to 1.5 percent by weight of fibers.

In combining the teachings of Manning et al. and Adam et al., the Examiner takes the position that "it would have been obvious....to have formed the slurry of Manning et al. so that is comprised 0.01 to 1.5 percent by weight fibers."

The Examiner has conceded that neither Manning et al. nor Adam et al. teach that the hydroentangling step should also form protuberances on the nonwoven fabric.

The Examiner has accordingly relied upon Benson et al. as disclosing that hydroentangled nonwovens may be embossed on rollers comprising one roll with protuberances and one smooth roll. The Examiner states that the embossing of Benson et al. "helps to stabilize the nonwoven," and that the embossments are disposed in a pattern.

In combining the teachings of Benson et al. with the combination of Manning et al. and Adam et al., the Examiner takes the position that:

It would have been obvious....to have embossed the nonwoven of Manning in order to texturize it and also to stabilize the fabric as taught by Benson.

As the Examiner concedes, neither Manning et al. nor Adam et al. teach forming protuberances on the nonwoven fabric.

Benson et al. teaches the formation of protuberances as the Examiner correctly notes. However, the teachings of Benson et al. are not applicable to either Manning et al. or Adam et al. for several reasons.

In particular, the protuberances of Benson et al. provide a specific function which is not required by Manning et al. so there is a complete lack of motivation of providing Manning et al. with the protuberances of Benson et al.

In addition, applicants' claimed discrete protuberances are structurally distinguishable from the protuberances required by Benson et al.

Benson et al. describes a "stable nonwoven web having an enhanced extensibility" that is prepared by mechanically "necking" a nonwoven web and forming "stabilizing embossments" that extend "across the stabilized necked nonwoven web 12 from one edge to the other edge."

Benson et al. teaches that having the embossments extend across the width of the web "is very important as this sets the fibers across the entire width of the web thereby stabilizing the web."

In Fig. 8 Benson et al. depicts "a spaced apart pattern of embossments" that "would not effectively set the nonwoven web."

Manning et al. does not teach necking the hydroentangled web.

In Manning et al, a number of preformed wet-laid webs are superposed together and then subjected to a series of water jets to cause hydroentanglement of the fibers of the webs. The hydroentangled webs are thereafter dried "by conventional drying apparatus" and then subject to embossing.

Absent teaching a step of necking the nonwoven fabric, there is no motivation in Manning et al. to form the "stabilizing" embossments of Benson et al.

That is, the only purpose of the embossments of Benson et al. is to stabilize the necking of the web. Absent performing a necking step in Manning et al., the embossments taught by Benson et al. provide no function or benefit and therefore their incorporation is not obvious for any reason found in the teachings of these references.

Even if the embossments of Benson et al. were incorporated into Manning et al. the resulting web would be structurally different from applicants' claimed invention which requires a plurality of

discrete protuberances which are "spaced apart from one another in both a longitudinal and a transverse direction of the nonwoven fabric."

If anything, applicants' claimed protuberances are more comparable to Fig. 8 of Benson et al. which Benson et al. teaches "would not effectively set the nonwoven web."

Accordingly, Benson et al. actually teaches against the use of discrete protuberances which are spaced apart from one another in both a longitudinal and a transverse direction of the nonwoven fabric.

Based upon the above distinctions between the prior art relied upon by the Examiner and the present invention, and the overall teachings of prior art, properly considered as a whole, it is respectfully submitted that the Examiner cannot rely upon the prior art as required under 35 U.S.C. §103 to establish a *prima facie* case of obviousness of applicants' claimed invention.

It is, therefore, submitted that any reliance upon prior art would be improper inasmuch as the prior art does not remotely anticipate, teach, suggest or render obvious the present invention.

It is submitted that the claims, as now amended, and the discussion contained herein clearly show that the claimed invention is novel and neither anticipated nor obvious over the teachings of the prior art and the outstanding rejection of the claims should hence be withdrawn.


Therefore, reconsideration and withdrawal of the outstanding rejection of the claims and an early allowance of the claims is believed to be in order.

It is believed that the above represents a complete response to the Official Action and reconsideration is requested.

If upon consideration of the above, the Examiner should feel that there remain outstanding issues in the present application that could be resolved; the Examiner is invited to contact applicants' patent counsel at the telephone number given below to discuss such issues.

To the extent necessary, a petition for an extension of time under 37 CFR §1.136 is hereby made. Please charge the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 12-2136 and please credit any excess fees to such deposit account.

Respectfully submitted,

  
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Marked-Up Copy of the Claims  
As Amended on February 18, 2003

4. (Four Times Amended) A method of making a nonwoven fabric containing thermoplastic synthetic microfibers, said method comprising the steps of:

- a. providing a wet sheet from a slurry containing about 0.5 to 20 % by weight of a fibrous mixture dispersed in water, said fibrous mixture comprising about 90 to 10 % by weight of thermoplastic fibers that are about 7 to 30 mm long and as fine as about 0.1 to 0.8 d mixed with about 10 to 90 % by weight of pulp fibers that are about 2 to 7 mm long;
- b. placing said wet sheet on a support;
- c. subjecting said wet sheet to high velocity water jet streams of about 50 to 200 kgf/cm<sup>2</sup> to effect mechanically entangling of said fibrous mixture and to obtain a nonwoven fabric; and
- d. passing said nonwoven fabric between a pair of embossing rolls to produce a plurality of discrete protuberances in said nonwoven [fabric.] fabric, said plurality of discrete protuberances being spaced apart from one another in both a longitudinal and a transverse direction of the nonwoven fabric.